

Development of a method for estimating the weight of volcanic ash deposits using image analysis

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There are many volcanoes in Japan and several of them erupt each year. Mostly, these eruptions are small and it is difficult to arrive at the area in time to collect samples because most of the eruptions are unpredictable. When the volcanoes erupt explosively, pyroclasts are emitted into the air, and the small particles are especially damaging to the lives of the people. To reduce this damage, it is necessary to obtain data related to volcanic ash (i.e. the thickness of volcanic ash deposits and grain-size distribution), and produce an action plan quickly. Currently, we collect samples by distributing sampling boxes manually on the ground when the volcanoes erupt. This method requires a lot of time and human resources. Therefore, we aim to develop a method of collecting ash deposit data by taking photos and analyzing them. At first, we started field work in Sakurajima volcano in order to develop a more efficient system. With this field work, we considered what the proper material and color of ash-receiving sheets should be, and how to control the amount of light. As a result, the problems inherent was revealed in taking photos of volcanic ash. Then, through laboratory experiments with artificial ash-fall deposits on the sheets, we obtained results showing a certain relationship between the grain-size of volcanic ashes and the weight per unit area regardless of the volcano of origin.

Keywords: Image Analysis, Volcanic Ash